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ANNUAL REPORT OF THE HOME COMMITTEE OF THE PARENTS' ASSOCIATION OF THE SCHOOL OF EDUCATION OF THE UNIVERSITY OF CHICAGO.[1]

MRS. CHARLES F. HARDING,
CHAIRMAN.

THE Home Committee of the Parents' Association of the School of Education grew out of the Social Committee formed some years ago in the Laboratory School. That Social Committee met and discussed the social and physical needs of the boys and girls, and at the same time strove to bring all of the mothers to an understanding of what the school stood for socially. Among other things, we agreed that a democratic spirit should prevail; that no sex line should be recognized; that the girls should be simply dressed; that there should be no idle roaming about the streets or idle visiting; that the social gatherings should be most simple. For the younger children we encouraged sleigh rides, picnics, and afternoon parties. For the older ones, we stood for early hours and plain dressing. And always we discouraged too frequent festivities of any sort. The teachers as well as the parents came to realize that social events were important. But something else was needed to make the social life more wholesome, natural, and developing. This should come through intercourse centered about common interests. So camera clubs, debating clubs, and sketching clubs were some of the clubs formed. We arranged with a young university man who had the

[1] A part of this report is taken from the author's "Social Needs of Children," published in the ELEMENTARY SCHOOL TEACHER for December, 1903.

true spirit of play to encourage plenty of activity of the right sort among the boys during noon time and for a time after school. We arranged with the young woman director of the gymnasium to initiate the girls into games out of school. The teachers met with us. Without their counsel and co-operation we could have accomplished but little. Each member of the committee acted as chairman of another committee and called that committee together to spread the principles for which the main committee stood. These committees met informally at the homes of the members. In this way the parents became acquainted with each other. They came to know the needs of their friends, and, I think, were of mutual assistance. In this way the school was brought into the closest touch with all the families represented in it, and furnished a unique instance of the whole neighborhood being a part of it, so that this community was associated with the methods, aims, and ambitions of the school in a way that made it an uplifting force, not only to its pupils, but to a large constituency. The subjects discussed in this committee were "Proper Recreation for Children," "Need of Public Playgrounds," "Value of Neighborhood Director of Games," "Out-of-Door Life in Cities," "Athletics," "How Shall the Time of the Child Out of School be Occupied?" "Physical Care of Children," "Periods of Growth," "Social Needs during Adolescence."

The committee was strenuous in its efforts to infuse into the little community which grew about this school simplicity in thought and in action, and I think we were all rewarded by seeing our boys and girls reach the ages of sixteen and seventeen natural and wholesome. But we did not have our own children only in mind. We hoped that the learning of a university — that rare pedagogical insight, combined with the earnest watchfulness and experience of the teachers and parents — might throw light upon what the social life of children of all communities, and especially of less favored communities, should be.

But the Laboratory School was small. Such a committee might or might not succeed in a larger school. The opportunity to test this came last fall when the four smaller schools were merged into a larger school — the School of Education. A

parents' association was formed, and the Home Committee was one of the committees provided for in the constitution.

By some inadvertence the constitution provided that the Home Committee should be composed of twenty-two members. It should have provided for a membership of twenty-eight; so that a chairman and a secretary might be chosen for the General Committee, and the other twenty-six be disposed of in accordance with the general scheme. There are thirteen divisions in the School, and the general plan was that every parent of the thirteen divisions should in one way or another partake of the work of this committee. To do this, after reducing the twenty-eight members by its chairman and its secretary, there would be twenty-six left — a sufficient number to furnish a chairman and a secretary to an organization made up of the parents of each of the thirteen divisions, and which organizations were to act with, and supplement the work of, the General Committee.

The general meeting of this committee for the purpose of organizing and outlining its work was held in February. The plan was to adapt the organization and work of the Social Committee of the Laboratory School to this larger school in its larger needs. The members showed a keen appreciation of what the committee stood for; *i. e.*, to secure such conditions at home and in the school as would accomplish the wholesome and natural development of the child and youth both physically and socially. The members of this General Committee subsequently called their committees together. As a result the Kindergarten Committee met and decided to meet every two weeks and conduct regular work with the possibility of publishing the results so obtained. The chairman asked for the co-operation of the parents in securing a more simple style of dress for the girls, and also to give the girls more of out-of-door life.

The First, Third, Fifth, Seventh, and Eighth Division Committees all met and held successful meetings. The following subjects were presented and discussed: "Gardening," "Literature for Children," "Reading at Home," "Dramatics," "Coeducation," "Social Life of Children," "Cheating in School," "The Relation Existing between Boys and Girls," "Athletics," "Fra-

ternities," and "A More Simple Social Life." The Fifth Division Committee asked that the School give more time to manual training.

The work of the High School committees was largely done by the First Year Committee. The committee conducted a series of meetings and considered the following subjects: "Athletics," "Fraternities," and "Substitutes for Fraternities." As a result of these meetings the following recommendations were sent to the faculty of the High School:

1. We urge the building at the earliest possible date of a students' club-house and the development of genuine club life.

Until this is done we ask for the setting apart of several rooms in the present building for this purpose, and we offer to assist in fitting them up and caring for them properly.

We urge that this club idea be developed in the spirit of a true democracy, with freedom of forming and leaving groups of friends, and under the becoming supervision of the faculty.

2. We urge the constitution and development of many clubs of special interests — debating, literary, musical, art, dancing, outing, etc. We ask that these interests be frequently presented to the students in public assemblies, and their social side made attractive.

We hereby offer to assist in finding money, meeting-places, and chaperones to begin and carry on this work.

3. We offer to conduct many social parties at our houses during the season, and so to co-operate that all students may be so reached. We ask the authorities to regard this as a part of their interest, to advise with us as to the best methods of doing it and of how to make it satisfy social needs of the students.

4. We urge the continuation and development of the afternoon school parties and dances. We rejoice in their simplicity and informality. We suggest the division of their attendance into several groups, so as to throw together those of similar ages and interests.

5. We urge the School not to permit the formation of formal fraternities and societies, because the social good they accomplish is bought at too high a price in waste of time; in social fixation; in the creation of a spirit of exclusiveness and of pride, and the consequent damage to those who are not members; and in the prevention of the freedom of social movement and the love of the School as a whole which is the first need of all young people.

In reply, Dean Owen of the High School said:

I am sure Dr. Belfield and I appreciate the spirit in which the committee has undertaken its work. The faculty voted in its last meeting not to permit

further initiation into fraternities. This, I think, will settle this particular question. This very act, however, makes it very important that we should do something really worth while in caring for the social life of our children. I shall try to get something definite to say to you in regard to rooms for social purposes.

I have spoken so far mostly of the past, but I have spoken also of our purposes, and they reach forward into the future as well as backward into the past. If our hopes and aspirations are to be realized, it seems to me that we must give to this work more than a passing interest; that we must all co-operate toward a common end, and that we must use the means at our disposal in the most effective way.

We, the parents of children in a school so richly endowed as this, have a double responsibility. Our responsibility in the first instance, and that of the teachers and officials, is to the children who attend the School. It is to illumine their path; to give them a better idea of the value of things, and a better idea of the relation of things; to elevate their notions of intellectual attainments; and to demonstrate to them what social life should be — to inspire them with the spirit of democracy, and to give them a lasting understanding of their own worth in the world.

Out of this arises our responsibility to the cause of education everywhere; and if we acquit ourselves well, we shall thus blaze the way for the introduction of similar aims and ambitions in our public schools and make it possible for them more fully to serve the end of their being.

It would be easy to show by multiplied examples that the real and actual work of large organizations must be done by committees rather than by the organizations themselves. It would also be easy to prove that all these committees in their work should realize that same democracy which they so earnestly recommend for their children and for the school; and therefore, in concluding this, my report, I recommend for the guidance of future committees that full records be kept of all of their proceedings, and, so far as may be, of the proceedings of the subcommittees, so that material may be at hand for publication whenever deemed best; and I especially recommend an adherence to the following principles:

1. The committee should be as informal as possible, and to that end should hold its meetings at the homes of its several members, where the atmosphere of the home will, by its very presence, suggest ideas not to be evolved from surroundings more formal and severe.

2. The discussion should involve the conditions, surroundings, characteristics, and tendencies of childhood and youth, and should be had with a view to initiating definite action that would better them. This distinctly does not mean the discussion of individual cases. Personalities should be carefully avoided. The committee should never forget that its function is general and not personal, and that its duty is not one of a grievance committee.

3. The committee should bear in mind the need of securing for the child a perfect physical development. This would involve lectures and discussions for the purpose of understanding the physical well-being of the child and the youth, and of securing the proper surroundings and conditions for such. At this point, among other subjects for discussion, would be that of athletics.

4. It should also consider at all times and keep in the foreground the need of proper social activity for the child. It should carefully distinguish between proper social activity and mere restlessness. The child needs leisure as much as work or social life, and this need should not be sacrificed. At the present time the restless social life of the child and youth needs serious consideration. Their training should be such that, in the words of a well-known educator, they could pass Sunday creditably to themselves; but, instead of that, their serenity and self-poise are being sacrificed.

5. Do not be discouraged if the discussions reach no result for the time being. The atmosphere will be clearing. In the end we shall see more clearly, and some good things will crystallize.

And last of all and most important of all, this committee and all the committees, if they are to reach the best results of which they are capable, must have — and I cannot bring myself to doubt they will have — the hearty and sustained co-operation of all the

parents, and of all the teachers, and of all the officials, and of the Parents' Association as such.

ORGANIZATION OF THE PARENTS' ASSOCIATION OF THE SCHOOL OF EDUCATION FOR 1904–5.

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THE PLACE OF TECHNIQUE IN ELEMENTARY MANUAL TRAINING.

FRANK M. LEAVITT,
BOSTON, MASS.

OF all the theories which may engage the attention of the manual-training teacher, I can think of none which will have more influence upon his daily practice in the class-room than will his theory as to the rightful place of technique in the work under his charge. If this be true, our subject is, then, of first importance and its consideration a matter of practical utility.

Someone has said that most discussions would be unnecessary, or even impossible, if those engaged in them would first concern themselves with mere definitions. At the risk of making the remainder of this discussion unnecessary, may I quote from the definitions of "technique" given in the *Century* and *Standard* dictionaries:

> Technique — the method of performance or manipulation in any art, or that peculiar to any artist or school; technical skill or manipulation; manner of artistic performance; the details, collectively considered, of mechanical performance in any art; also mechanical skill in artistic work; used especially of the practical details of any fine art.

If we are to have a suitable basis for discussion, it is evident that we must distinguish at the outset between the "method of performance" and that exactitude in performance which the words "technical skill or manipulation" and "mechanical skill in artistic work" may imply. Let us accept as a basis for discussion the definition first given, "the method of performance or manipulation." For example, one might clamp a plane in the vise in an inverted position and draw or push a piece of wood over it against the plane iron. He might become so skilful in this performance that he could produce a perfectly plane surface on the wood. I think we should agree that he had a faulty "technique," although the performance was one of exactitude or accuracy.

In the light of these prefatory considerations, may I say,

unequivocally, that I believe the development of a correct technique to be of prime importance in manual training, considered as an educational scheme.

Technique in any educational scheme, of which the child is to be the product, should be considered simply as a means to an end, not as an end in itself. It is felt by some that the development of accuracy is one of the objects for which instruction in handwork is given, and in so far as this is admitted, technique may, in a sense, become an end rather than a means. In my opinion, however, it has no place as an end in elementary manual training, and it is a fair question whether it does not receive far too much attention, as an end, even in secondary schools. Modern educators are agreed that manual training is peculiarly adapted to accomplish for our children certain general educational ends, and it is only as technique enhances the possibility of this accomplishment that it is worthy our consideration.

What are some of the ends which manual training is thought to further? I would mention the quickening of the creative instinct, the inculcation of a respect for labor, the formation of habits of neatness, order, directness, and exactness, and the induction of the logical and rational thinking and doing of one who believes in cause and effect. Let us ask to what extent technique is useful in the acquirement of any one of these objects, for example the development of the creative faculty, bearing in mind that we have agreed to consider technique not as accuracy, but rather as the method of performance. The creative faculty is developed only by personal achievement. The little child is satisfied with comparatively modest achievement so long as it is continuous and progressive. He is also satisfied with a moderate degree of accuracy — or, shall we say, is not disturbed by a considerable inaccuracy — so long as he achieves something which appeals to him as useful and desirable. Nor is he hurt by such inaccuracy so long as he does not fall below his own present standard, which standard is imposed by the project in hand. In the early days of his acquaintance with the plane he may wish to prepare a piece of wood seven inches wide, for use in the kitchen as a cutting-board. It is very probable that

in this early effort he would meet with better success, in planing just to the line, if he were permitted to stoop down and peer under the plane while using it, as we know boys so frequently wish to do. He might thus stop nearer the line, but his shavings would not be so good. His work would be comparatively accurate, but his technique poor. When we reflect, however, that at some future time he may need to produce true surfaces, for glued joints let us say, and will therefore need a better method for the accomplishment of the result which he himself desires, then we realize that this method of using the plane is objectionable. His technique is insufficient. It would seem wiser to have required the boy to use the very best method of handling his plane when engaged in his first planing, and when a slight, or indeed a considerable inaccuracy would not have impaired the usefulness of the product or have discouraged the young worker.

This regard for technique then, this insistence on the employment of the correct method, is important chiefly because it insures the fact that the tools, in the child's hands, shall be tools of ever-increasing efficiency, keeping pace with the enlarging ambitions and advancing standards of the worker and the increasing demands of his problems.

It will be the easier to accede to the demands which this theory makes upon our practice in the class-room, if one is not overanxious for accuracy in results. But this desire for extreme and immediate accuracy is far too common among us. I believe that one of the dangers which beset our work lies in the fact that the facility which it offers for developing accuracy is its most prominent feature; and not only prominent, but alluring. There are many warm advocates of manual training who see in it nothing more than this opportunity to instil a regard for small measurements, square corners, good curves, and a fine finish. Manual-training teachers who believe in the fundamental importance of this feature feel that every method leading to accuracy of results is a good method, and every means of securing it a worthy and legitimate one. It is unfortunate, for the best interests of our children, that the prominence of this feature

hides, from the eyes of so many, the fact that the ability to adapt means to ends is of far more importance than mere fussiness; that ingenuity is more useful than a highly specialized ability, at least for young children; and that the joy of creating is a more elevating motive than the desire to imitate the skilful performance of another. We are in little danger of forgetting the importance of accuracy, but we may easily overlook the fact that an unnatural demand for accuracy destroys the spontaneous effort of the child, and robs him of that sense of reality which is peculiar to manual training as contrasted with much of the academic work. It is this very unreality, of necessity characterizing purely academic work that educational manual training was designed to correct.

In an address an intelligent advocate of manual training, a layman, recently said:

> With manual training, however, the immature faculties are not forced out of their normal path; the child is not compelled to lie to you and to himself by pretending to a literary power which he cannot have. One simply employs the natural instinct of the child to use its hands, one merely seizes upon that passion of most children to make something, one but leads into regulated channels the brimming enthusiasm of healthy youth for the bending and shaping of inanimate things.

Is it entirely true that manual-training teachers are never open to the criticism here made, by implication, of the teachers of the humanities? Is it not possible that we sometimes compel a boy to lie to us and to himself by pretending to a mechanical skill which, in the very nature of things, he cannot have? I believe that we should free ourselves from any suspicion of this criticism, and confidently rely on the method commended in the above quotation.

What, then, should be our practice in the class-room regarding the hand-work of our pupils? I sincerely believe that we should view with complacence all "results" so they be the product of the boy stimulated by a vital interest and achieved with the proper tools thoughtfully used. Here, it seems to me, is the specific point at which the teacher has a right to be dogmatic. For the sake of encouraging experimentation and thoughtfulness

he may occasionally permit the use of a wrong tool, but he should at all times insist upon the correct handling of the tool, upon correct position and intelligent use; that is to say, a use that has due regard to the form and construction of the tool and the physical limitations of the worker — a reasonable technique.

Equipped with a knowledge of the correct method of handling tools, supplemented by some habitual application of that knowledge, inspired by a vital interest in real work, and opposed by the demands of reasonable problems, we may feel sure that the pupil will gain, along with the major benefits of manual training — as, joy in creation, respect for labor, habits of order, directness, and rational thinking and doing — the relatively unimportant acquisition of a mechanical precision in his hand-work.

Technique will then hold a chief place in our regard, because it will furnish our pupils with power to manipulate the tools and materials with which manual training deals — a power commensurate with the reasonable demands of the immediate project; and we may be confident that when the demand for accuracy is a timely one, it, like all others, will be adequately met.

MANUAL TRAINING AND MANUAL LABOR.

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THE UNIVERSITY OF CHICAGO.

THE march of manual training in the educational world is rivaled by the retreat of manual labor in the industrial world. At first glance the general situation seems to be something of an anomaly. The tremendous development of machinery and applied science in the industrial world has crowded in between the brain and the hand, feeding on both, assimilating both into the complex automatism of its own growing structure, till the hand-labor that is left, to say nothing of the brain-labor, seems hardly more than a temporary makeshift, awaiting a few more new inventions to put it, not painlessly perhaps, out of the way. And now comes the exploitation in the schools of the very form of activity which is fast becoming obsolete in industrial life; and with this exploitation of a survival there arises, curiously enough, or rather just as we should have expected, in analogy with many other social survivals, an entirely new attitude toward hand-work. It comes to have an æsthetic value it did not enjoy before. The original activity became drudgery or worse. The survival is a thing of beauty.

An anomaly, or a paradox, is of value because it forces conceptions to a deeper level. Is there a tendency to confuse manual training with manual labor — with the handling of tools and materials to secure merely tangible results? Is the child to work with his hands, and with the knife, saw, and hammer, after the manner of an adult laborer or unskilled artisan, in response to the dictates of a model, or sequence of models? Is it argued that the child's moral nature, his habit of truthfulness, is being developed by this process, because of the fact, forsooth, that he cannot very well lie out of any discrepancy between the model and his own copy? If so, then the present era in manual training corresponds, all too closely, to the great era of "fancy-work," with all its unfanciful hideousness and triviality; an era which

followed the rapid development of machinery for spinning and weaving, culminating in the invention of the sewing-machine, and which in its unhappy fashion exemplified the law of the æsthetic survival of a formerly useful occupation.

I have seen some outputs of manual training which educationally were, so far as I could make out, pretty much on a par with the crocheting of tidies, with "drawn-work," or with the embroidery of doilies and lambrequins. I do not mean to speak disrespectfully of the educational value of such modes of expression. For some individuals it is doubtless very great. Nor would I confuse the placing of a little stitch at regular intervals along the line of a shop-stamped pattern with true constructive and artistic work in textiles. The point I wish to make is, after all, the point that has been made so many times that one is in doubt as to how much longer it will be proper to bring it up; namely, that the educational value of any form of activity depends, not on the stuff used, but on the attitude of the user. Do manual training and "fancy-work" amount to the same thing educationally? They do, I repeat, if the attitude of the worker in each is practically the same. And I submit that it is practically the same when the worker in wood or in iron, as the worker in worsted, in silk, or in linen, follows, though patiently, the line of a stamped pattern whatever it be called.

Thus we come back to our anomaly, in so far as educationally we find ourselves repeating, under the guise of manual training a form of activity which the larger social and industrial situation is trying to eliminate and tolerates only as a temporary makeshift.

So far we have been looking only at one side of the æsthetic value which a social survival may have. We have been discussing, by implication at least, the more narrow, trivial, and anomalous directions into which the æsthetic interest may lead. Everyone has probably experienced the kind of æsthetic gratification one has in doing over again, under very different conditions, something that was originally distasteful, or in living over again in the imagination something that in the first place was a hardship. One's dire failure can sometimes be recounted with

great satisfaction in the presence of later successes. This may be the lowest form of æsthetic gratification, being pretty much a sheer repetition of a previous experience. There is little appearance of growth in the repetition, in the recount. The prosperous individual who is forever sunning himself in the reminiscences of his early toil and struggle is a type that leans toward the side of complacency rather than toward the side of further development of the spirit. Still there is more of positive value in this form of æsthetic gratification than we have charged to its credit. On the very face of it, it is something more than a reinstatement of a previous experience. The event has been taken out of its original setting and placed in a new one. Hence, the charm it did not have before.

And here we come to a parting of the ways. In one direction lies the blind alley of mere repetition of the act for the sake of continually realizing upon its charm. In the other direction lies the open road of further question and endeavor, of larger possibilities, toward which the æsthetic appreciation may be an impelling stimulus. Surely the quickened interest in arts and crafts, the newer æsthetic appreciation of things that are "hand-made" may have more in it than that form of æsthetic gratification which arises through the mere repetition of manual labor in the new setting of machine-made things. If it has not, then it deserves to stand condemned as a "fad" and a "frill."

It is a matter of comparative indifference as to whether the arbiters of taste will continue to fill their houses with "hand-made" furniture, "hand-made" books, and "hand-made" bric-a-brac. It is a matter radically different as to whether this new-found appreciation of manual work which has come into education, this new æsthetic attitude which is upon the whole the most revolutionary factor in modern education, shall be allowed to crystallize into a sentimental form of manual labor, or whether it shall be generalized into a group of constructive activities which shall constitute a fundamental part of the curriculum. It is not a question of determining the place of constructive activities. It is a question of how far at any given time these

activities are *recognized* and *utilized* as educational means and opportunities.

In the industrial world what would probably be regarded as the two most serious factors in the "labor problem" are the isolation of labor, particularly of unskilled labor, on the one side, and the irresponsibility of intellectual control, on the other. Specialists in nerve diseases tell us that one of the most characteristic symptoms of that form of mental derangement known as hysteria is some phase of anæsthesia, or the lack of feeling, the lack of sensitiveness, in some part of one or more of the sense-organs, usually touch and vision. One writer[1] significantly terms this anæsthesia of hysteria "chronic absent-mindedness," or a "contraction of the field of consciousness." There is evidence for believing that this partial loss of feeling, of sensitiveness, is due, not to the impairment or actual destruction of any portion of the sense-organ itself, but to the isolation, the dissociation, of the inner nerve connections. The point may be given an application in terms of social psychology. If there be any violence and working at cross-purposes in the present industrial world which can be fitly compared to the violence — the "accidents," as they are sometimes called — of a hysterical patient, the analogy would lead one to look for corresponding symptoms of social anæsthesia, of lack of feeling, lack of sensitiveness, equivalent to "chronic absent-mindedness," to a "contraction of the field of consciousness," on the part of those concerned, employer and employed. And it would lead one to see in these symptoms, when found, in this lack of "touch" and "vision," not the impairment or actual destruction of any portion of the sense-organs of social consciousness, but the isolation, the dissociation, of inner nerve connections; for example, in the failure of manual work to be done in terms of free intelligence, as an expression of personality, and in the co-ordinate stultification of intellectual control in its own irresponsible exercise.

Is the manual training situation to be chiefly a reflection of a pathological and hysterical social condition? Is it to be an

[1] PIERRE JANET, *The Mental State of Hystericals;* translated by CAROLINE R. CORSON.

æsthetic survival of the gulf between manual labor and the operations of intelligence? Sufficiently current, probably, is the belief that the utilization of motor activity in getting things made is likely, in the case of children and youth, to be of educational value. But why should it be of educational value in the case of children and youth any more than in the case of adults, unless it be the occasion of bringing into play, also, the ideas, the intelligence, the "inner nerve connections," the "touch," and the "vision" of the individual worker? It is surely the freeing of these that transforms manual labor into manual training.

MANUAL TRAINING IN PRIMARY GRADES.

ANNETTE BUTLER,
THE UNIVERSITY OF CHICAGO SCHOOL OF EDUCATION.

ONE may enter the University of Chicago at the age of three, and at this time his work in manual training begins.

The kindergarten during the past year has furnished its doll-house with tables, chairs, beds, and cupboards. Saws, hammers and nails, with small blocks and pieces of wood, were used, and many small busy hands, with absorbed interest on the part of the diminutive owners, were the means by which the furnishing was accomplished. In the springtime stakes were made for their gardens; "the most satisfactory stakes ever used" being the verdict of their teacher.

In the first grade the underlying thought of last year's work was food supplies and the industries pertaining thereto. In October a farm was planned. The children decided upon a house and barn, a milk-house and a corn-crib, to be made of wood. In time fences were added, and two wagons, bridges for the stream, and some improvements upon the house and barn. At the conclusion of the first lesson in planning the farm, one very small boy added nonchalently: "And don't you think it would be rather nice to lay out a little golf ground?" The dimensions of the farm were determined by the size of the available sand-table, and the buildings were made to scale. It was distinctly a community project, each one having his part to do. Seven children made the seven pieces of the house, each one drawing on a paper, with ruler, the pattern of the piece he was to make, to exact size, and from that pattern making the same piece in wood, using quarter-inch bass. Each child had the privilege of nailing his piece to the part that came next, and in this manner the buildings were all completed. After the buildings were laid out upon the sand-table, the animals were added as suggested by the children. Dogs, sheep, cows, horses, and even a woman churning, were

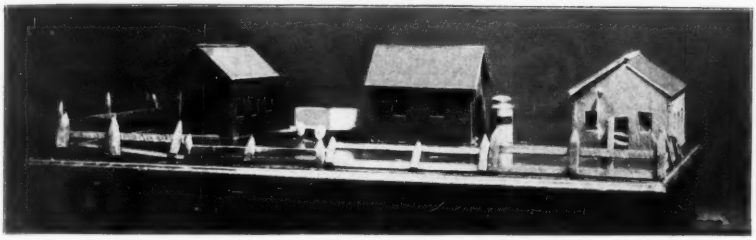
made from clay, and all helped to lend interest and reality to the work.

The constructive work of the second grade called for clay and textiles as working material, except for the wooden trowels for gardening. These were triangular pieces of wood, sharpened on the edges, with handles nailed to them.

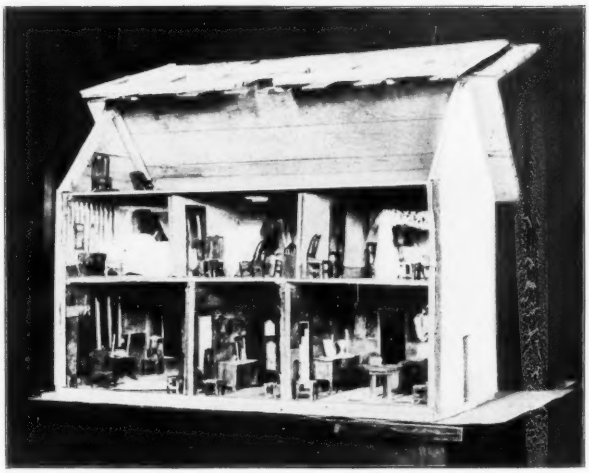
Early in the year the third grade was particularly interested in the more primitive peoples, and especially in their means of transportation by land or sea. After some discussion on the subject of transportation by land, each one of the class drew a plan of the vehicle he would make, if he were confined to the materials these primitive people had at command—logs, the bark and boughs of trees, leather, and strong grasses. It was decided that holes might be bored by using the auger bit, since the pieces of wood used were too small to be bored by the use of fire or crude tools. The results were most interesting when worked out, improvements suggesting themselves to the children as the actual materials were worked upon. The principles of both the wagon and wheelbarrow were seen in the results, and when the springtime came, the planning and making of two wagons and two wheelbarrows suitable for their gardening came only as a more elaborate working-out of the principles already mastered. During the winter the life and adventures of the vikings of the Northland, and of Ulysses of the southern country, were a basis for much of the constructive work of the grade. Armor and weapons typical of the two peoples were made; designs for boats were drawn and worked out of cardboard, with appropriate designs on the sails—the fiery dragon for the viking boat, and a beautiful Grecian border for the boat of Ulysses, with its bird-head at the prow.

The fourth grade studied the early colonial history of Virginia, and during the winter laid out on the sand-table Jamestown and the surrounding country, making the small town of cardboard, clay, and sticks. The Indian village was also built, using birch bark, cardboard, sticks, and raffia. It was a natural outgrowth of this to build the colonial house of that locality and period. Each one of the children had his distinct part in this

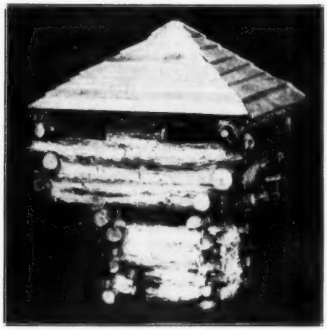
building, with its six rooms and attic, its hardwood floors, its fireplaces, the outlying houses, and slave quarters. The furniture was made of paper to the definite scale of an inch to a foot. In connection with their study of milk and its properties, in domestic science, the class made a cheese-press, in which fifteen cheeses were made at one time.



FIRST GRADE FARM BUILDINGS.



PLANTATION HOUSE, MADE AND FURNISHED BY THE FOURTH GRADE.



FORT DEARBORN, FOURTH GRADE.

ART.

CHARLES ZUEBLIN,
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GOETHE said once: "Fortunate is he who at an early age knows what art is;" which you may take as a platitude, but Philip Gilbert Hamerton has said that in the whole realm of art literature you will hardly find a sentence of equal significance.

We all have had the experience, either in ourselves or in others, of trying to overcome years of neglect or bad teaching; and often no amount of information, no amount of subsequent training, will neutralize the mistakes of the schools. I fancy most of us have gone through some sort of art-training. Unfortunately for many, that usually has meant merely a sort of encyclopædic survey of the great painters and sculptors of the world. Unless we can learn some of the elements of art, we cannot by mere knowledge of art products remedy our deficiencies.

I want to speak here very briefly about the function of art with respect to occupation, social welfare, and culture, believing that we shall satisfy these needs best if in preparation for occupation we give students a knowledge of form, color, and design; if in preparation for social welfare we consider especially the beauty of environment; and if as a contribution to culture we consider the fine arts and the lesser arts in harmonious relations. Those of us who were educated in the public schools, or even the private schools, twenty or thirty years ago, will have had scarcely any instruction in form, color, and design. I remember very well the style of public-school instruction — if I may quote a personal experience — which obtained in Philadelphia at that time. I stayed in the country late one autumn, and came into school every day, with permission to take one session until two o'clock. The teacher of my class stayed through the lunch hour every day, and for the first time I learned something of her skill in free-hand drawing, when she prepared the blackboard

by a slate pencil for the coming chalk lessons. That was the character of instruction given throughout the schools of Philadelphia at that time. At the end of fifteen years of school life in Philadelphia I am perfectly sure the average student did not have the remotest conception of the elements of art. I presume the other schools were not much better. Even today you go into schools where teaching in art is given; it is still called drawing, and that drawing is still too seldom the means of recording one's own impressions.

Tolstoi defines art as the power of telling someone else what one sees. A little boy gave to his teacher at one time in a sketch his impression of the vacation school by an attempt to show the boy who went and the boy who did not — two very grotesque figures, suggestive of the before and after of patent-medicine advertisements. I have used it as a lantern slide, trying to show how we should make use of our impressions, no matter how rude the art. The grotesqueness of it always strikes the audience, and I have taken it as a reflection not on the boy, but on the audiences, that they did not get an idea when they saw it carried out, because of the crude form. He showed the idea as it came to him, but of course without training he did not have the power of recording it skilfully, of making it vivid. The kindergarten is supposed to begin the removal of those deficiencies from which we suffer, by teaching children form and color. As the kindergarten methods penetrate into the grades, there is given more of the conception of design. I have had the pleasure of visiting some of the manual-training schools in this country, and I would speak especially of the Mechanic Art School in St. Paul, where the endeavor and actual accomplishment with every child are teaching him to express his own ideas. In Chicago there has been the introduction of color-work with children, and it has been found that, while only 50 per cent. can reproduce in black and white, about 99 per cent. succeed in the use of color; which implies that the child has in him usually some artistic idea until crushed out by false methods of instruction.

It has been the custom to stuff children full of facts; as some-

one said recently, we paraphrase the old idea about the little star: "Twinkle, twinkle little star, teacher's told me what you are." Occasionally now they are allowed to find out these facts for themselves. Very few of them, however, acquire these very simple fundamental things — a conception of form, color, and design.

What is the economic value of this form of teaching? The greatest necessity of the workman of today is adaptability. He is frequently stranded for lack of it. I remember living with a friend in London who kept bachelor quarters, and marveling at the skill of his domestic — a man who seemed equally capable in the garden, kitchen, or garret. I wondered that such a versatile man should be found in domestic service. My friend told me he had been a skilled watchmaker who had perfected his special skill so assiduously that he had failed to do anything else, so that when they invented a machine which could do his work, and that was taken away from him, he was stranded; and so he became a house servant. That is the condition of the majority of workmen today, if good workmen; if comparatively inferior and unambitious, the condition will not be so difficult. In the schools of today the power of adaptability should be given chief attention; children should be taught to use their hands to express the ideas of their minds. It is astounding to see what little children can do with clay. Those of us who never got beyond the crude mud pies which we taught ourselves to make after we had escaped from school can scarcely realize what children can do in the schools today.

I think sometimes we hear rather excessive denunciations of the value of reading and writing from such people as John Ruskin; yet, after all, it is asked whether in learning so much from books we have unlearned the capacity for observing with the eyes and executing with the fingers. Beginning with clay and other plastic materials, we can carry children up to a recognition of what a soft finish on a table means, contrasted with the mirror-like tables with which we have been familiar — to realize that the texture of wood signifies something. This is an equipment for industry which it may take years for us to appreciate.

You will witness this curious phenomenon in the world today: a man who can manage men can go with ease from one situation to another; he can go from being an engineer on a railroad like the Illinois Central to the position of an engineer on the Panama Canal — as happened here recently — simply because he has that power of adaptability. But the average workman has not that capacity, and is thus limited in his occupation.

John Ruskin's famous dictum in regard to good architecture is, first, that the material should be good and true; second, the ornament natural; third, the designer left free to work from his heart. We have stifled that capacity in the workman, if he ever had it. I do not believe, of course, that the change of methods in schools will immediately bring large rewards; it will probably bring rebuke from employers. But, after all, there is a growing demand for individual products, and the workmen themselves will not long be content with the humdrum limitations of today. People say, however, that this development of handicraft is reactionary. But that is not the case. There is a movement which is running counter to that of machine industry, which comes very largely from the fact that even in the midst of the mechanical triumphs of today we are insisting upon individual workmanship. The time is coming when either we must go back to lead a primitive life, or we must have the opportunity to express individuality in workmanship; and it is being hastened in the schools today by giving children, not a knowledge of the great sculptures, but the power of design, which emanates from a knowledge of form and color.

A few years ago, after an extension lecture which I gave in an Iowa town, the drawing teacher in discussing the subject gave a little exposition on the blackboard of the meaning of proportion, and drew the outline of a house, and put the windows and doors in where they ought to be. That was twenty years after I left the grade schools, and yet it was the first intimation I had had of what proportion meant in a building. I am afraid there are a great many people quite as ignorant as I was as to any proper conception of form. The most graphic illustration of this is in the decline of colonial architecture at the time we supplanted humble bricklayers by skilled architects. The old colonial build-

ings are invariably satisfactory in form and color. The builders had no education in the schools — only instinct. They had a tradition of form. The moment that generation died out and the trained architects of the schools undertook to draw their conception of colonial architecture, it began to decline. They have not in their souls any tradition of proportion, and they draw something out of their minds which is mathematical and not artistic. Half a century ago in England they were talking about the significance of the oval. Everything was built upon the oval. Everything today is built upon the city building lot. The conception forced upon the architect is the city building lot, and this again is mathematical, being compelled to produce a thing which a mechanical civilization wants.

A friend of mine was standing, or rather sitting, reverently looking at the Venus di Milo recently, when a woman brought in a troop of American girls; and they all stood, craned their necks, and looked at the Venus. Then she led them over, and they looked at the fragments. They looked as tenderly at the fragments as they looked at the statue. They had seen every element of it preserved, and they were satisfied — checked it off, and went home. That is not the attitude of the illiterate. It is the attitude of the average untrained mind until he has seen such an amount of true art that he *knows*. That is the remedy — to see enough until one knows. We can do this in the schools. I repeat, therefore, that in preparation for occupation the most necessary thing is to get the power of adaptability; and that can best be done, not by definite technical training, but by elementary teaching in form, color, and design.

To secure social welfare we must secure beauty in environment. We have made the greatest progress in the decoration of schools, and the landscape architecture outside the building has advanced marvelously in our day. Many will remember the bare white walls and blackboards of the old-time schoolhouse, with nothing to relieve the bleakness unless some teacher could not resist the impulse to put in plants. Now we have frequently good pictures, although too little discrimination and too many of them. Then we have better school grounds. Unfortunately, some schools have none. I have in mind one in Chicago which

stands flush with the sidewalk. The children must play in the street. Back of the school are two very little spaces where the children could not all stand up at once. Of course, we cannot decorate those tiny spaces. We must have courage to attempt greater things. We must get a beautiful environment for the school. Not that the children shall be told just what that means, or that they shall be taken up in order to these pictures, as we would in a good religious ceremony go around and reverently view each one; but in some way or other they will absorb the influences, if given the opportunity. In our efforts to teach new ideas we have unfortunately too often taught them in the same way as the old ideas. An example of this is the two vacation-school children who were viewing with the greatest possible interest the eagles in a cage in Lincoln Park. One said: "Come on, let's go away, or we will have to draw them." They enjoyed them to the utmost until they thought of some formal task. The unconscious influence of those noble birds would have been equally beneficial.

But what are you going to do even with a beautifully decorated building, if after leaving it the children must be turned loose amid the conglomerate architecture of Lake avenue? The best teacher cannot eradicate the influence of bad grammar at home, and the best art teacher cannot eradicate from children the impression of the advertisements along the elevated and steam railroads. Even private residences bear advertisements, probably because the backs and the sides of almost all houses in Chicago are unworthy of anything but advertisements. I am not so sure but the owner is right to have some sort of paint to cover up the sort of brick that you see in some of those buildings. The child cannot go out of this building and keep all that he gets here. Consequently we shall have to undertake a reformation, training this generation as well as the next. That again means going down to the fundamentals. A great many people have on their walls beautiful oil paintings and in their houses hideous furniture; and they do not know it. I do not know whether it is that they put all their souls into the old masters and divest themselves of their surroundings. It is true that music and the fine arts are of infinitely less importance than the

furniture, the hangings, and the kitchen fittings. We can never eradicate those impressions by any amount of education in the fine arts. Until the environment becomes harmonious we are going to undo the work of the schools. If the schools are going to effect anything, they must be met half way by civic and home improvement.

Of course, in cultural improvement we must get a considerable notion of the fine arts, because they are intimately related to culture. Music, literature, sculpture, and painting — we must know something of these if we are to get a knowledge of art; but they are rather the means of finding out things than real knowledge. The average woman's art study club is merely learning to finger the lexicon by cataloguing art products. That is valuable knowledge, but it gives us not one single æsthetic conception. There again we have to go down to the fundamentals. As Ruskin said, to study carefully the Grand Canal in Venice was worth a visit to all the galleries of Europe.

Sargent has painted many beautiful portraits of the millionaire and the millionaire's beautiful daughter, but he has never done anything for a private patron like his decorations for the Boston Library. No painter could rise to such heights in painting the picture of any millionaire as in painting some beautiful and ennobling subject, something that touches his soul. A wonderful influence is sweeping over the country, giving the people a conception of the difference between mural painting and easel painting — a work of art related to a building and a work of art not related to anything. We gain thus not only greater artists, but a culture not merely for the favored people who can go to Europe, but for the multitude who, if they cannot have this abundant knowledge, at least can grasp the fundamental principles that will teach them something of harmony. I take it that it is not impossible with the forces already at work in the schools to teach form, color, and design so as distinctly and valuably to influence the mind of the child and lay the foundation for this culture which will give us that sense of harmony and make for the child of the future a more beautiful environment for the expression of his ideas.

THE APPLICATION OF ART TO HAND-WORK.

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CHICAGO.

THE difficulties of the application of art to the teaching of hand-work in schools arise from the fact that very few teachers are artists. It is impossible for a man to communicate to others what he does not know himself. Not everyone has the capacity for art, and even for those who have, the attendance for a few months at a summer school, or even the taking of a short course in design, can hardly be sufficient preparation.

One not infrequently meets with teachers giving instruction in manual work who have made the discovery that there is some connection between things of beauty and the work in hand of which hitherto they have only seen the mechanical side. For such, of course, there is some hope; but the stress of school work and the multiplicity of things they are expected to know renders it generally impossible for them to spend sufficient time in developing their latent faculties. They see the beauty of some picture by Raphael or of some modern landscape, and perhaps of some example of architecture, but the way of art by which these were created are incomprehensible to them, and the connection between such objects of beauty and the work to be done in wood or in weaving is hidden from them, because they have had no fit training in the appreciation and the practice of design.

For these reasons it seems as though specially trained teachers were necessary to teach those branches of work to which design is applicable; and design is a necessary part of all better hand-work.

The ugliness of almost all the articles of modern manufacture can be combated only by the development of the sense of beauty in the people who buy them, and the gulf between the really artistic work which is done by a few, and the want of beauty in the articles of common use, can be bridged only by the training of the young of the nation to see with their own eyes beauty of

form and color. The hideousness of the ordinary wooden or stone house in town or country, and the tawdry decoration and graceless form of such things as the usual forks and spoons, can vanish only when a future generation shall have been trained to see and to feel that they are ugly; the designing and making with their own hands of such simple articles as are within their power to make at a suitable age is the surest way of developing better taste in children.

For those who wish to teach design there is but one way of developing what faculty they have for it, and that is by drawing, and at the same time by being with students and teachers who have a better appreciation of such things than they have. Hence it is obvious that a course of design at a real art school is the best means open to them. Such a course must last for years, not months; and they had better attend the regular classes for art students than any specially devised "normal" course, in the first place because the standard required is a higher one, and in the second place because they will have the opportunity of being among more students who are really artistic. It need hardly be said that the ordinary "normal" school is the last place to study such things.

The beauty of such articles as children can make with tools or with a loom depends, as does the beauty of all things, chiefly on simple proportions, on the balance of spaces or the harmony of colors. The subtle principles of such balance and harmony have been set forth in many a lecture by Dr. Denman Ross, and a course in his summer school at Cambridge would be a great help to a teacher. Some things connected with the balance of values in design are expounded in Mr. Dow's book on composition, which might well be placed in any teacher's library. But the reading of a mere statement of these things is not sufficient; the study of art can be made only by the practice of the art. You can no more learn to draw and to design by reading about drawing than you can learn to sing by reading text-books. The daily practice of drawing lines and filling spaces with design is the only royal road open to the student.

Of course, manual work can be done with very little regard

to design, and is useful in itself. The greater part of the so-called sloyd is good training for the hands and brains of children of a certain age; and in the same way the mechanical drawing introduced by Mr. Liberty Tadd has much to recommend it as mechanical work. In the one as in the other case there is very little beauty of design applied; but there is no reason why the good there is in both systems should not be joined to beauty of model and finer appreciation of form.

And now as to the children. Probably the first art — art in the ordinary acceptation of the term, and apart from the subtleties of pedagogical and anthropological pedantry of which we have had a good deal — to which they are accessible is music. And the music best suited to them is to be found in the folk-songs of the peasants of different countries; for natural selection through many generations has preserved a large number of beautiful melodies in Germany, in Italy, in Russia, in Scotland, and elsewhere. The first training in the artistic emotions can be accomplished by the musical singing of these simple songs. I say musical, because in a great many kindergartens and grade schools it is not music which is produced by either the teacher or the pupils. The music should be taught by a musician daily, and not by an unmusical teacher with a weekly visit from a musician as superintendent. Of course, if a teacher is musically gifted, she should be encouraged to train herself, and be allowed to take part in the teaching.

The next forms of artistic handicraft for young children are clay-modeling and basket-making. The latter should be done with somewhat coarse materials. In this, as in other kindergarten work and in drawing, there have been made many mistakes in giving work which is too fine and too small for the children, much to their detriment.

At the age of six or thereabouts drawing with the full arm on the blackboard after the system of Mr. Tadd, can be used. Each day an exercise of fifteen or twenty minutes would be in place.

As the children grow, the basket-maker can be gradually led on to simple forms of weaving, and in connection with it to the

relation and harmonizing of color; the brush-work with water colors which would go on at the same time is excellent if capably conducted by one who has an eye for color. Then at the age of about nine carpentry of a very simple kind may be introduced, and at about twelve simple carving in low relief might be added.

Such work as is done with the fret-saw, or so-called Venetian iron-work, is less desirable than the other crafts which have been mentioned, as there is less variety of skill required in them, and the results are not so interesting.

One word as to results, and at the same time as to technique. Children want results — articles made to take home and show as their work; and much of this desire is natural.

But the true workman who is learning a craft cares little for the objects which he can produce in comparison with the satisfaction of his desire to acquire skill in the use of his tools. And it may be that in many classes too much stress is laid on "objects made," and much too little on the acquisition of technique.

Manual training is also mental training, and the power of concentration required to use any art really well is of more worth than rooms full of articles made for use or for show.

It is said that children cannot be got to practice the use of a tool. There is even one rather well-known superintendent who asserts that the practice of technical studies on the violin are useless. This, of course, is foolishness, although it may be granted that such practice as may be best for an apprentice of sixteen is impossible for children of ten; still it would seem that more regard to technique and more practice in the use of tools, regardless of the child's haste to produce finished objects, is desirable, than has been the case in most of the manual-training schools.

It is as great a mistake to set children to any sort of manual-training work before they are fit for it as it would be to teach them Latin grammar at the age of eight, as used to be the fashion. It is frequently the case that both brush-work and carpentry are begun far too early. Any kind of work may be a pleasure when it is done by one who is either the master of it

or who feels that he may attain to mastership. But there is nothing so disheartening to a child as to be set to do what is beyond his years.

And this remark applies, of course, to the artistic side of hand-work. You must not expect appreciation of the composition of a Japanese color-print or of a Botticelli picture from young children. But you can set before them models which any but the perverted among them will admire, and which yet have nothing in them to contravene the laws of beauty obeyed alike by Botticelli and by the Japanese. And in these truly lies the difficulty named in the creation of beauty in simple forms.

We have far too little respect for art, and anyone who learns to draw and paint thinks himself, and is thought to be, an artist; but this is not so. Of the thousands who go through the Paris art schools not 5 per cent. are artists. And the first great step toward the introduction of more art into manual-training classes may perhaps be possible only when the majority really recognize the high mission of art and the reality of beauty, which is trodden underfoot by the present turbulent course of commercialism.

SCIENCE IN THE FRANCIS W. PARKER SCHOOL.

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IT will help us in our discussion if we distinguish two phases of science-teaching. Science is organized knowledge, and the two phases to be distinguished are (1) gaining the knowledge and (2) organizing it.

The presence of the latter phase as a conscious motive of teacher and pupil distinguishes the work of the secondary from that of the elementary school. The latter is "science," in the exact and restricted sense of the term; the former we will call "nature-study," including under that term a study of both animate and inanimate things.

It is the purpose of this paper to discuss the point of view, methods, and values of the science-teaching in our school, and to show the relations of nature-study to systematic science, and of both to mathematics.

"Nature study," says Hodge,[1] "is learning those things in nature which are best worth knowing, to the end of doing those things which make life most worth living." The end of the study is thus *action* — doing things. But what are the things the doing of which makes the pupil's life now and in the future most worth living, and what are the things which are therefore best worth knowing? "They are indicated in a fundamental way by the relations which the human race has found it necessary and valuable to develop with nature" — relations which have existed from prehistoric times, and which will persist through every advance of civilization.

These relations are mainly with *living* things — animals and plants. Upon plant and animal life primitive man depended entirely for his food, his clothing, and, excepting the cave-dweller, for his shelter. Our modern civilization has not altered this

[1] C. F. HODGE, *Nature Study and Life* (Boston: Ginn & Co.), p. 1. The writer wishes to acknowledge with gratitude the influence which Dr. Hodge's teaching and book have had upon his own views of nature-study.

fundamental dependence. We, too, go to plants and animals for our food and clothing, while the forest still furnishes most of our shelter. The chief difference between us and primitive man is the way in which these necessaries are secured. The primitive man who sought refuge from large animals by climbing trees and hiding in caves, who obtained his vegetables direct from nature's bounty, and his flesh by preying upon small animals, offers a profound contrast to the modern dweller in cities, to whom wild animals are unknown, whose food grows hundreds and even thousands of miles from his table, and whose clothing comes to his hand ready-to-wear.

Let us look for a moment at the steps by which man has advanced from his former simple and immediate relations with nature to his present complicated and remote ones. This progress has been due to a better control of the animate and inanimate forces of nature, and gaining this control has been and is the nature-study of the race.

The first step in this long series was the *subjugation of animals,* which victory left man no longer the prey of the cave bear and tiger, but their pursuer and hunter, and insured his continued existence. Even now, however, the conquest of animals is far from complete. Insects still destroy the crops of whole counties; vermin still annoy us; microbes still destroy thousands of lives.[2]

The next step was the *domestication of animals.* After man's existence was secure, he came to recognize that some animals could be made his friends and helpers instead of remaining enemies.

The first animal tamed was the dog, which is still the idol of the child's heart. Then came, also before the dawn of authentic history, domestication of the horse, sheep, goat, horned cattle, and most of our domestic birds; and it is self-evident that the family or tribe which first developed patience and intelligence to tame and utilize animal helpers must have rapidly outstripped all rivals in the race for life.

The next, and possibly a greater advance of the race, was the *cultivation of plants.*

[2] This and the two following paragraphs are condensed from Hodge. His chapter on "The Point of View" is a masterful argument for the predominance of the biological matter in nature-study.

This has constituted the largest factor in the transition of tribes from wandering nomads to stable, populous, civilized communities. In the stability of landhold we have the beginning of home as distinguished from the casual camping ground; and with the founding of homes came commerce and arts, literatures and sciences as well.

While man has been developing by the subjugation and domestication of animals, and the cultivation of plants, he has also been concerned with inanimate things. Ever since he began to earn his bread by the sweat of his brow, he has needed and used tools. In fact, we may say that his entire progress has been possible only by the aid of implements. A step in advance far greater than the invention of tools was made when man seized the forces of nature and compelled them to do his bidding. The harnessing of nature's inanimate forces is the last step in the nature-study of the race, and, in fact, reached its height only in the inventions of the nineteenth century.

There can be no doubt that in broad lines the development of the individual follows that of the race, and that the active doing things with nature which has been the chief means of advancing the race will prove most helpful to the child. To place the child in the conditions which have caused the race to advance, we must give him opportunity for action which seems of real value to him and worth his greatest effort. That these conditions are normal to the child and most favorable for his growth is shown by his own natural instincts and spontaneous activities — his love of pets, his desire for flowers, his joy at seeing plants grow, his eagerness to handle things and to make them go. These instincts are toward active relationship with things, and not toward passive contemplation. The child wants to play with his dog, and does not care at all whether Towser has three or five toes on a foot. He wants his garden to grow so that he may eat its products, and he cares little for the number of seed leaves on his beans and corn. A wide range of active first-hand contact with nature is the normal condition for the development of the child, as it has been the chief means in the progress of the race, "and to substitute for this contact the study of pictures, museum specimens, or caged animals is to miss the substance for the shadow."

We have tried to follow these principles in the selection of our work in nature-study. We have sought to make the work active, to have it of practical importance, and to bring the children into direct contact with nature. In the lower grades the attention is directed mainly to the study of living things and the use of tools, while in the upper grades the study of natural forces is gradually introduced.

The establishment of relations with animals begins in the kindergarten. The school cat and her kittens are wonderfully interesting to these little people. I am not certain that they know how many ears or how many tails she has, but pussy always received a joyous welcome from them. The upper grades, too, have a warm feeling for her, and anyone who watches the face of a sixth-grade child playing with the cat at recess will conclude that the animal has its function in a school. The first grade has had the care of a guinea pig for several months, and I never see a more happy or more eagerly busy crowd of children than when I watch these first-graders cleaning this animal's house in the morning and getting him ready for the day. Now, the care of him during the school day even does not suffice them, but the children must take turns in carrying him to their homes after school. The third grade has had an aquarium of turtles in the room through the year, and other aquaria have been in various rooms. Just now there is a great deal of interest in the development of a lot of tadpoles.

By far our greatest success with animals is with our bees. Our other animals are obliged to live in artificial surroundings and to lead lives more or less foreign to their natures. The bees, however, have a regulation hive, go out of doors to gather honey or pollen as they desire, build their combs and rear their young in their own fashion — all exactly as if their only function in life were to make honey for some hard-headed farmer. The only differences between their present life and what it would be if the farmer owned them are that they must travel some eight inches through a glass-topped tunnel to gain access to the open air, and that we can remove the wooden sides from their hive and look through glass at the walls of their city and the manifold activity

there. The hive is in the kindergarten room, and to the kindergarten children the bees are a never-ending source of wonder. The little people stand by the hour and watch the bees coming into the hive, and count those carrying pollen until they get to a hundred. Sometimes one child counts the bees with yellow pollen, while another takes those with red, and a third those with brown. The older grades also watch the hive with interest and have observed the laying of the eggs, the growth of the larva, the sealing up of the cells and distinguishing characteristics of worker and drone cells, the emergence of the young bee, and have made some study of the structure of the insect.

It is only a short step from getting acquainted with our domestic animals to the study of those which we meet in our garden and which affect our crops for good or ill. We have met thus far the earthworm, the groundbeetle, the cabbage worm, and the potato beetle. The latter two have not yet appeared this year, but probably they will not forget us. The young children always seem to think that earthworms eat the roots of plants, so when the kindergarten child first sees an earthworm he proceeds at once to cut him in two with his hoe. To convince the child of his mistaken opinion, it is only necessary to place a few earthworms in a jar of white sand, on the top of which is placed a little black earth, or, better still, leaves of various plants. A surprising increase in the quantity of black earth will occur within a few weeks; and if this experiment is accompanied by one to show the importance of black earth to plants, the child will not again deliberately cut earthworms in two. Experiments of this sort are now being carried on in the kindergarten, the second and fourth grades.

In the study of the cabbage worm and potato beetle the first point to be considered is how our crops can be protected from their ravages. In order to do this most effectively, we are led to the study of the life-history of the insect to learn from what place he makes his appearance and at what point we can attack him most successfully. While the study of the life-history is begun from this utilitarian motive, it is soon pursued for its own sake. The cabbage worm seems an unpromising field for anything

interesting, but when we watch its rapid growth, its formation of a cocoon, and its emergence as a white moth which immediately proceeds to lay more eggs, we have an example of the life-history of all insects — one of nature's deepest marvels.

Besides the insects, we have found this year in the garden two toads. These were captured, brought in, looked at, and their food was discussed. Then they were put into the garden and a board placed for them to live under, in the hope that they would stay there and devour insects. I am sorry to say that the inducements offered were not sufficient, and that they have apparently forsaken us.

Besides domestic animals and those found in the garden, the child is also interested in the wild life around him. The latter does not touch him so closely, but it appeals far more to his imagination and sense of the beautiful. Our aims in its study are to have the pupil realize in the life of the wild creature something akin to his own, and to find the part the creature plays in the economy of nature. For both these purposes we study the habits, food, and life-history of the animal. In knowing these facts we become acquainted and even friends with him. With this study a certain amount of naming and learning to recognize is essential. We try to do these things in ways which permit initiative on the part of the children and give as full play as possible to their powers. Cages have been made in which insects can be raised and their development watched. For preserving collections we have adopted a device[3] adapted especially for life-history collections. It consists of two plates of glass kept apart by a wooden rim; the specimens to be mounted are glued to one of the glasses,[4] and the whole is fastened together with passe-partout paper.

In attempting to reproduce in school those relations with plants which have aided the civilization of the race, we have had two places to work, the school grounds and the garden.

The object of the work on the grounds is to make the surroundings of the school as beautiful as possible. The raking and seeding of the lawn which have to be done every spring,

[3] See HODGE, p. 53.

[4] A little glycerin in LePage's glue will make it stick to the glass.

and the spading and manuring the soil around the hedges, have been done by the older pupils. Every spring we have had a formal planting. The work which any one pupil does on these occasions amounts to little, but in calling his attention to the desirability of having beautiful surroundings and in cultivating his æsthetic emotions we think it well worth while.

The garden is managed with an entirely different object — namely, to bring every child into close contact with the soil and have him learn the value of his own efforts in making things grow. We have tried to give to every child below the eighth grade some piece of ground which should be entirely his for this summer. He has chosen what he wanted to plant, has himself done the entire work of planting, will have the entire care of it during school, and will get all the products to dispose of as he likes. By this means he reaps the result of his own labors as directly and immediately as if he were making something in wood; only in this case his product depends not upon his own efforts alone, but also upon the closeness with which he makes them conform to the laws of nature.

Besides these individual beds, each grade has a large bed of some product upon which the class works together. The object of these class beds is, first, to furnish an illustration of the growth of the staple products of the country; second, to make experiments in their cultivation. The planting is generally preceded by some study of the best method to use. A careful record is made of what is done, and the results obtained in the fall are noted and recorded. Sometimes two ways of doing a thing are tried and their results compared. We hope that the records thus made will prove of value to future classes in showing the best procedure for our particular soil.

We use all or most of the products of these beds in our school work. Last year, for instance, the third grade grew tomatoes, and in the fall made them into pickles. The kindergarten grew popcorn, which was used at Christmas. The fifth grade grew flax, which they rotted and hackled and prepared for spinning. It had got too brittle, however, to be spun, probably because it was too old when cut. They have another bed of it this year.

The sixth grade grew sugar beets, and tried to extract and refine the sugar. Now, the extraction of sugar from sugar beets is a matter of some difficulty. Slicing the beets, soaking in water, and boiling down is easy enough, thus making a molasses, sweet but black and ill-smelling, and tasting disagreeably of the beet. For two years we have experimented in getting rid of these undesirable qualities. We have not succeeded yet, but our hopes were never higher. This year we have planted more sugar beets than ever before, and while we are not taking orders for sugar, we expect to obtain some which will be edible, if not marketable.

This year we are attempting to develop the economic importance of agricultural work, by keeping a careful record of the cost of the garden and the value of its products. The cost of manure, plowing, and other labor is divided among the different beds. Each grade keeps the record of the cost of the seeds, fertilizer, etc., used on its own beds. In the fall it will reckon the market value of the crop, and compute the profit or loss. In some grades this will be carried farther to find how much would have been made upon an acre of ground under the same conditions. The yield of our crops per acre will be computed and compared with the average yield in Illinois and other states. By this means we shall have an opportunity to compare our work and soil with that of the average farmer, and to see if we ought not to do better; and also it will enable us to realize how hard the farmer has to work for his product, and something of his importance to the community.

This spring we have started a new experiment by planting seeds of trees. We desire in this way to get the children acquainted with seeds and seedlings, to have them get over the feeling that there is something more mysterious about the appearance of trees than other plants, and to learn a lesson in patience. We hope that the patience will be rewarded, and that in four or five years we may see the blossoms on our own peach trees, and a little later on our pear, plum, cherry, and apple trees as well. The care of the trees, the budding, grafting, the digging of borers, and the keeping off of other insects, will furnish enough to do and enough to learn amply to justify the planting of the seeds.

I might at this point speak of some limitations of our school work in these lines. The children are absent in the summer — the time when the garden is at its height, when the labor is most exacting and the returns most abundant. The work is also limited by the smallness of the plots which can be assigned to each pupil. A four-foot square is the largest given any child. This is too small for him to really work on. As an object-lesson it is of the greatest value; but it is, after all, only an object-lesson, a model of a garden, an illustration of a farm; and models, object lessons, and illustrations can never take the place of the real things. The same is true even to a greater extent of our animals. A school cat and guinea pig are good things, but one cat for two hundred children does not give a sense of ownership nor a feeling of responsibility for its care; and one guinea pig can hardly establish with eighteen children those relations of mutual aid and dependence which have been the main channels by which the domestication of animals has contributed toward civilization.

The difficulty would not be helped much by a multiplication of cats or guinea pigs in school, and an increase in the size of the garden, while desirable, is impossible. We must look to other sources than the school for the establishment of these personal active relations with plants and animals which are of too much educational importance to the child to be omitted from his life. The country home is the natural and most effective place for the establishment of these relations; and though the city home offers much less chance for such work, yet there are few houses which do not possess some square feet of back yard that would look better for the planting of vines or flowers, or could be made to produce a few vegetables. It is a pity when any of these opportunities for the children are not utilized.

The great problem of a garden is, after all, how to make the plants grow, and a child working in a garden is sure in a little while to be seeking for things to help his plants. The main factors which influence the growth of plants are soil, moisture, temperature, and light. The finding out of the influence of these factors upon the plants, and the discovery of methods by which they can be controlled for the best growth of the plant, start

several lines of inquiry. Some of these open up topics of importance enough to be carried farther than the immediate needs of the garden demand. Some examples of this are given below.

The second grade performs experiments in growing things in different kinds of soil — sand, clay, loam, etc.; and the fourth grade carries the experiment farther and studies the effect of a particular kind of soil occurring over a large area.

The weather conditions of sunshine, rainfall, wind, and temperature are recorded in the lower grades. The effect of the weather upon the garden is, however, only one of the reasons for doing this work. The immediate effects of its changes upon the pupil and upon vegetation and animal life at large are other potent reasons. Several forms of weather records are kept in the lower grades, and a set of monthly landscapes is painted by some grades which shows strikingly the effect of seasonal changes. This work is extended in the fifth grade to a study of the climate of Chicago. In the sixth it is made the point of departure for a study of annual changes, especially of temperature, in which study the change in the sun's slant is shown to be the cause of summer and winter. In the seventh grade there is a study of climatic conditions all over the earth, in which the causes of climatic differences are discussed. This work is greatly helped by the fact that the pupils come to it with some idea of the meaning of statistics — such as thirty inches of rainfall in a year, and a mean monthly temperature of 20° or 65° — and are able to use the meaning of these figures in imaging the conditions of other places.

Finally, the direct effects of different heat, moisture, and light conditions upon the plant are observed. These observations and accompanying experiments are, of course, only of the most obvious kind at first, such as growing plants in windows where the light comes from one side, or growing them in the dark. Later comes the observation of characteristics of plants which naturally grow in different conditions — in swamps, prairie, ravine, sand dunes, etc. Lastly, the pupil tries to find out precisely the effect of water and light upon a plant, by a series of experiments in plant physiology in the seventh grade.

Cooking is a form of activity with natural products, we may

say of nature-study, which has existed from the dawn of history. It furnishes an admirable and logical supplement to the work in the garden, and it is also a point of departure for a great many experiments which are more purely scientific; *e. g.*, the effect of acids upon carbonates, the growth of yeast and its products, tests and characteristics of various fool principles, and the effect of heat upon them. These are not, however, the chief reasons for teaching cooking. The chief reason is that it answers our original requirement of nature-study; for is it not one of the things the doing of which makes life most worth living?

Many of you will agree with me that hand-work is the most efficient means which could be devised for enabling the children to gain control of the inanimate forces of nature. It is thus repeating the last step in the nature-study of the race, and its influence must be included in considering the science work of the school.

I wish to say a little about the relation of nature-study to mathematics. Out of the impressions and images of the external world are built all of our mental pictures and concepts. Words are of value only in so far as they awaken images in our mind of things we have already experienced. Mathematical symbols and expressions, unless they stand in the pupil's mind for some definite relationship in an external, concrete world, are meaningless and worse than useless. The material world is the place where these relationships exist, and getting control of natural forces and turning them to use is where the relationships become of importance to man. Work with these forces must, therefore, be the most natural and effective place for the study of these relationships which are the foundation of mathematics.

I have already mentioned in connection with the garden some things which could not be done without the use of arithmetic, and several more whose significance could not be understood without the use of number-processes, sometimes quite complicated. We are finding more and more of these problems each year, and a portion of the number-work of all grades consists of problems drawn from, or necessitated by, the work in science. It is the unanimous opinion of the teachers that these problems carry

home the reality of symbols and the meaning of processes as no amount of book-work can do, and that what is thus learned for the sake of immediate use is regarded of more worth and longer remembered than problems done with no motive but the gaining of facility in some process.

The above is not the case with concrete problems in which the pupil has no interest. In these he must understand the concrete thing or illustration first, and then the mathematical process. His difficulties are thereby increased, not diminished. This is especially so in many of the mercantile and commercial problems in text-books, where the thing talked about — promissory note, bill of exchange, stock, or bond — is entirely foreign to the life of the pupil. These things may have their place in the elementary school, but that place is after, not before, the arithmetical processes involved are well understood. The pupil's attention can then be directed to the conditions existing in the outside world which give rise to the paying of interest and commissions. The conditions understood, the principles underlying the transactions become plain and the mathematics almost obvious.

But these problems are too far from the life of the pupil to be used for the developing of his mathematics. The problem for the development of mathematical principles must be one whose solution is important and of immediate interest to the pupil, and one in which the concrete facts are easily seen, and in which the attention can therefore be directed to the mathematical principle involved. In the right working out of such problems comes the pupil's surest and most rapid mathematical progress. We have a good number of such problems already, and it is a cherished hope that we may finally obtain enough for the development of all needful mathematical principles, and for some, but probably not for all, of the drill necessary to give facility and accuracy.

We now turn to the second step in the acquisition of a science — the organization and systematization of the knowledge. The pupil should finish the elementary stage with the knowledge of many of the things of nature around him and considerable control over them. He has undoubtedly also grouped many of the facts together, and knows the relations of many of these groups

to himself. But up to this time he has not done much thinking about the relations of the facts and forces of nature to each other. We make the first extensive attempt to have the pupil do this in the eighth grade. The work of this grade, like that of preceding ones, is designed to secure an active contact with nature by observation, experiment, and work; and it seeks in addition to summarize and put into their proper relations the facts of science which the pupil has been learning through the seven previous grades, and to discover the relations which exist between those great organizations of knowledge known as the sciences of chemistry, physics, physiology, and botany. I shall in the following tell with some detail how this is done.

We began the work by calling the pupil's attention to the fact that most moving objects, such as street cars, locomotives, and automobiles, had a source of power or energy, which generally could be easily located. Animal bodies also move and do work, and the question was propounded as a basis for the year's work: "Must animal bodies, especially the human body, also be supplied with energy, if they are to do work? If this is so, from what source does the energy of the human body come?"

We first tried a set of experiments with pulleys, which showed that no combination of them could be made which would do more foot-pounds of work than was used up in running the pulleys. We generalized this to other machines, especially levers. We then began a study of the human body, and found that its work was done through a system of bony levers, and that the muscles applied the power to them. The muscles, therefore, must perform at least as many foot-pounds of work as are done by the hands and feet. A study of the structure of muscle showed the class that the power came from the contraction of a multitude of tiny striped fibers. Our question then became: "What source of energy gives these fibers the power of contraction?"

The class at once suggested food as the most probable source. So we tried a set of experiments on the composition of the common foods, and found that they all contained carbon. We knew that the burning of carbon outside the body produced heat, and that heat could be transformed into any desired form of energy

by the action of the steam engine, dynamo, etc. We, therefore, set to work to find what becomes of carbon when it is burned. After experiments extending over about four weeks, we came to the conclusion that carbon, in burning, unites with a gas called oxygen and forms a new substance, which is a heavy gas having the properties of putting out flame and turning lime water milky. This gas was found to exist to a slight extent in the atmosphere, and to a much greater extent in exhaled air.

Our problem was then to find how the food reaches the muscle. We first learned the different food-principles, and the test by which each can be recognized, the most important sources of each, the principles which should be observed in cooking each; and had some practice in the application of these principles. The digestion of each of these food-principles was studied; then their absorption and the various routes by which they get into the blood. In connection with this we studied the anatomy of the digestive system, and later of the circulatory and excretory systems. Most of this study was done from a papier maché mannikin, which represented solid models of the various organs. An effective method of work was to have the pupils make drawings of the organs being studied. The above work traced the route of the food from the mouth to the muscle.

We next studied respiration, and found that the lungs are constantly taking oxygen from the air and replacing it with carbon dioxide. We found that blood has the power of absorbing oxygen where that element is plentiful, and of giving it up where it is in demand. It then required small faith on the part of the pupils to believe that the blood carried oxygen to the muscle and brought back carbon dioxide. The matter was summed up as follows: The blood brings to the muscle sugar and proteid foods and oxygen. It carries away carbon dioxide and broken-down proteid.

The children at this point wrote papers answering, as well as they could, the question: "How does the muscle get its energy?" These papers required the hardest thinking done in the course. The pupils very generally arrived at the conclusion that the energy came from the union in the muscle of carbon and oxygen; that the

carbon came from the sugar and proteid in the blood; that the oxygen was brought from the lungs by the red blood corpuscles; and that the union formed carbon dioxide, which was carried away by the blood and eliminated by the lungs.

The class then raised the question: "If animals are constantly producing carbon dioxide, why does not all the oxygen of the air become replaced by carbon dioxide." They suspect that plants have something to do with it, and we shall spend the rest of the year in showing how plants are able, by the action of sunlight upon their green leaves, to change carbon dioxide and water into starch and oxygen, the one of which becomes food for man and the other his breath.

This great cycle of carbon from the inorganic, inert carbon dioxide, up through the plant where it is elaborated into starches and sugars, into the animal where, after becoming a part of still more complex tissues, it is finally reduced again into carbon dioxide, is to me the most impressive illustration of the conservation of matter. The marvel deepens when we think that this carbon, separated from its oxygen and seeking it again, carries the energy for all human endeavor, and that, when once used, it can be made available again only by the action of energy from that far-away source, the sun.

This course serves as an introduction to our high-school science. From it, as a starting-place, we can continue the study of energy and its various changes, which is the science of physics; or investigate the transformations of matter, which is chemistry; or we can study systematically the structure and behavior of animals, which is zoölogy; or that of plants, which is botany. In any case, we ought to know how the particular group of facts studied is related to the other groups, and that nature and science are not manifold, but one.

We have chosen physics for our second year's work in science. Our work here is along more conventional lines than that of the first year. Of course, we use the laboratory method, and stand by our original principles of having the pupil get into as active relations as possible with the thing studied; and we select for that purpose those topics which seem of practical value in life. But in all these respects we can make no claim to uniqueness.

There are two respects in which we do differ somewhat from the ordinary school: (1) Our pupils begin, and still more in the future they will begin, this course with considerable knowledge of the facts of physics. For instance, the third grade studies the water supply of Chicago; the fifth, the boiling of water and the heating apparatus of the building; the sixth, air-pressure and the barometer. This gives the pupil a much broader and better base for his generalization than when he must make his generalizations and learn his facts at the same time. (2) An unusual amount of apparatus has been constructed by the pupils. It needs no argument to show the better understanding and control of the apparatus, which this gives them.

The relation of mathematics to this work in physical science is a most interesting problem, but it is too large to be treated in this paper. Suffice it to say that the relationship has long been recognized by teachers of physics, and is beginning to be by teachers of mathematics; but little use has thus far been made of it in teaching. It has been found during the year that the physics has shed much light upon some parts of algebra; *e. g.*, meaning of negative numbers and their addition and subtraction, proportion and variation, the equation as a law, square root. During the next year a consistent attempt will be made to develop the algebra of the tenth grade from suitably selected experiments in physics.

And when, at last, the pupil has finished his school work in nature-study and science, what will he have gained from them?

First, from a utilitarian standpoint he will be familiar with a good many industrial processes and be able to do amateur work in several. He will have understanding and control of those forces of nature with which everyone comes into contact in his daily life — those involved in cooking, housekeeping, gardening, the care of animals, etc.; and will have the knowledge and manual dexterity to use them to his own ends. In a broader sense, he will know the mutual relations and interdependence of many industries — a thing of value in whatever vocation he may adopt.

Intellectually, he has been thinking in scientific things and by the scientific method. The scientific method of thinking may be

summarized as follows: gathering data by observation, making a hypothetical law or generalization from these data, deducing consequences from this law, and testing the consequences by experiment. If the results of the experiment tally with the hypothesis, the latter may be stated as a law. Now, Dr. Dewey says that this method of thought demanded by the science is the only possible way of true thinking.[5] The study of science ought, therefore, pre-eminently to develop the power of clear and logical thinking. This is a deduction which, I believe, is verified by a study of the facts.

Nature-study also aids intellectual development by establishing new interests. The fulness of one's mental life is largely dependent upon the number of things in which he is, or may be, interested. To one familiar with her, Nature offers a wonderful variety of such interests. She is by turns amazing and quieting, thrilling and peaceful, beautiful and terrible. To her we may go for inspiration or solace, for work or for rest. To be her friend is to have a certainty of perennial interests.

Ethically, science studied as we have indicated helps accomplish one great result: it substitutes an active for a repressive method in dealing with moral questions. It teaches boys to study birds and build places for their nests, instead of molesting them and making game wardens necessary for their protection. It teaches boys how to grow grapes and peaches of their own, and does not make laws to prevent their stealing from others.

Finally, we may also claim for science a distinctly religious value. For do not the order, regularity, and precision with which effect follows cause in nature's domain indicate a single underlying and unifying law? And what is religion but to work in accordance with this law for the creation of happiness and the good of men? The child who cares for an animal, raises a plant, or makes some article for the comfort or well-being of men is working hand in hand with nature. And what truer religion can there be than that he thus become the image of his Creator?

[5] JOHN DEWEY, address before the Central Association of Science and Mathematics Teachers, November, 1903.

FALL PLANTING.

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Most flowering bulbs should be planted in the autumn. In this latitude the proper time is the month of October. It is usually not difficult to interest pupils and parents in the spring planting of seeds; but there has been comparatively little done in this direction in regard to the fall planting of bulbs, shrubs, and trees. The great majority of the earliest spring flowering plants are those that begin the year before in a bulb that lies through the winter at a greater or less depth below the surface. The frost is scarcely out of the ground when the first tender shoots appear, and in an incredibly short time, even sometimes with the snow flying, they blaze out in a wealth of color that contrasts strongly with the dull surroundings.

There is no good excuse for a school or home that can have the use of any ground being without these flowers. They are even more easily planted than seeds, and, when once in the ground, they require almost no attention. They grow, flourish, and die in a period when no weed is able to compete with them for place and power.

A bulb is something like a big underground bud. Its structure, which varies somewhat with different plants, can be readily understood by dissecting an onion or a tulip bulb. At the base is a short nub which answers for a stem to support the leaves that, much thickened, closely inclose the tender growing points in the center. The bulb is a form that the plant has invented which enables it to carry through the inhospitable winter into a second season a large food supply that it has spent all of the first season in manufacturing. It is not necessary, therefore, for a bulbous plant to postpone the period of flowering until a large foliage area has been developed, as most plants that come from the seed in the spring must do. Its thickened leaves, at the first peep of spring, are ready to give up their rich nourishment for the immediate

development of flowers and fruit. The foliage leaves of the second season are chiefly concerned in building up a new bulb for the following year.

I. GENERAL DIRECTIONS FOR PLANTING.

1. *Soil.*— All plants have acquired certain habits which the gardener must respect if he is to succeed with them in cultivation. To understand bulbs, go to the localities where wild lilies of different kinds grow, and note the conditions. They will be found usually in loose, loamy, moist ground, but in areas not always covered with water. A shaded woods with a deep soil of leafy mold is a favorite spot. They will not be found in dry, hard, and unshaded clays. In the winter they lie well covered with dead leaves which in a wonderful way keep the earth from freezing.

The conditions, therefore, for bulbs the size of a tulip, etc., are (*a*) deep, loamy, sandy soil; spade up the ground at least a foot in depth; (*b*) a well-drained location; round the surface of the bed so the water will not stand on it in winter; (*c*) a loose, leafy cover for the winter. If the location is on the sunny side of a wall or house, the start will be much earlier in the spring, but the blossoms will not likely last so long.

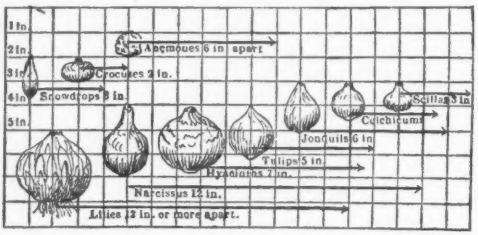
2. *Arrangement.*— It is best, generally speaking, to plant so that the flowers will appear as masses of color. A notable exception to this plan is the crocus. It may be planted with fine effect over a grassy lawn in groups of twos or threes. With a spade or trowel lift one edge of a piece of sod, making a hole about three inches deep. Place in this two or three crocus bulbs and replace the sod, patting it down. For weeks in the early spring they will beautifully spangle the sward with white and purple and gold. A clump of snowdrop bulbs tucked away in a sheltered nook will surprise one with its modest bloom before the snow is gone.

The accompanying chart, reproduced from *Popular Gardening*, gives clearly in graphic form the depth and distance from each other that the common bulbs should be planted. The best way, perhaps, is to spade out the entire bed to the required depth, and then set the bulbs firmly in the ground in the desired order.

Carefully cover them with fine earth, and then soak the bed with water. After this fill up the bed to the top, leaving the surface rounded.

II. SELECTION OF BULBS.

It is not necessary to name here specific varieties, as each one will wish to make his own choice from the florist's catalogue. Among the various kinds that may be counted upon to give satisfaction are the following: tulips, hyacinths, snowdrops, daffodils, scilla, narcissus, jonquils, crocus, and lilies. The florist's catalogue will indicate the time of blooming of each of



CHART, SHOWING DEPTH AND DISTANCE APART OF BULBS.

the different varieties, and the blossoms may be so timed as to appear simultaneously or in succession, as may be desired. In general, the early and single varieties of tulips and the single hyacinths are the most pleasing and the easiest to raise. In buying, it is always best to select large, first-class bulbs which may be depended upon to give a vigorous plant. They cost more than the "bedding" sizes, but the results justify the extra expenditure, and if one must economize, it is better to get along with fewer plants.

III. OTHER PLANTS.

In addition to the bulbs, there are many other flowers that may be planted in the fall; sweet William, peony, iris, hollyhock (the roots), columbine, phlox, and pansies (seed) are among the number. Autumn is the most favorable time also for planting trees and shrubs. This may be done as soon as the leaves fall. At

the end of summer one is apt to have fresh in mind the particular spots about the house that during the summer would have been greatly improved by the presence of a shrub or tree. In planting the latter, some of the hardier fruits should not be overlooked. The Whitney crab, for example, yields abundant and excellent fruit, and is a beautiful tree either in leaf or blossom. It should be remembered, too, that the smaller fruits, such as gooseberries, currants, raspberries, and blackberries, will do well along a fence or wall in a space that otherwise may easily become unsightly. If such out-of-the-way places are thus filled up there is at once a sufficient motive for keeping them in order.

IV. CARE.

As winter approaches, the roots of all the plants should be well soaked with the hose, if the rainfall is insufficient. The bulbs and other plants of this general class should be covered to a depth of four to six inches, if possible, with that best of all nature's litter, autumn leaves. The covering should extend several inches on all sides of the beds. If leaves cannot be obtained, then straw, or other light material, may be used. When the severest weather is over, the litter may be in part removed. As the ground thaws out, take it all away and lightly stir the surface among the bulbs. The ground should be kept thoroughly moist, but not too wet. Ordinarily the water from the melting snows will be quite sufficient to bring out the earliest flowers.

PEBBLE GAME.[1]

MUSIC BY MRS. CROSBY ADAMS

Let us find a hid - ing place For this lit - tle stone;
[2] Wal - ter, turn a - way your face Un - til the stone is gone;
Wal - ter, Wal - ter, now turn back, Let us find the peb-ble's track,
Wal-ter, Wal-ter, now turn back, Let us find the peb - ble's track.

[1] It is believed that this game and these words originated in Germany.

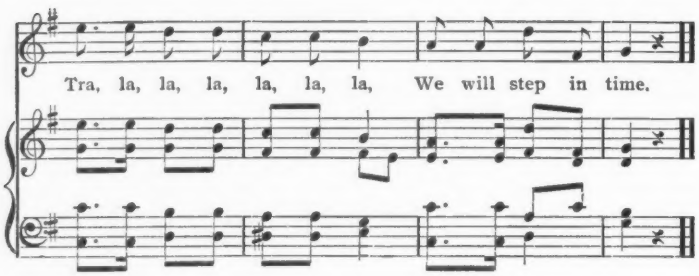
[2] The name of any child playing the game may be inserted here.

FORMING THE CIRCLE.

AUTHOR OF WORDS UNKNOWN

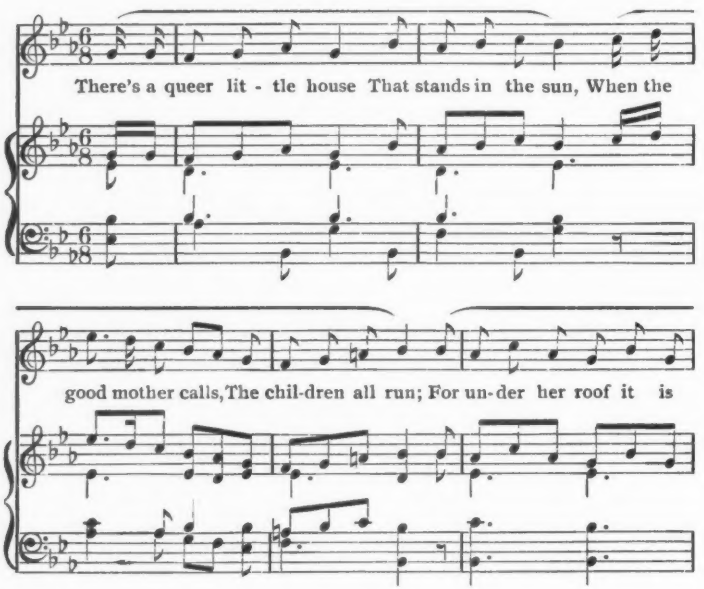
MUSIC BY MRS. CROSBY ADAMS

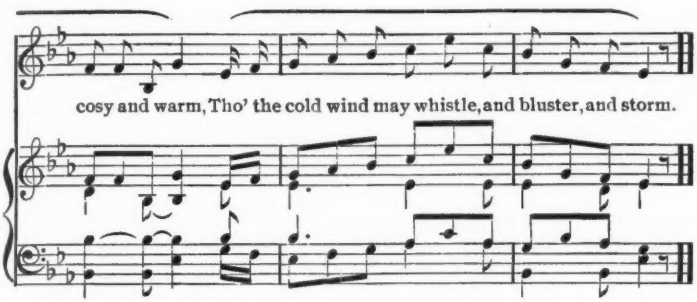
Face the cen - ter of the ring, Tra, la, la, Tra, la, la,
All to-geth - er gai - ly sing, Tra, la, la, la, la,
Heels to-geth - er, toes in line, Placed so neat-ly, yours and mine,
Tra, la, la, la, la, la, la, Step in time, step in time,



A RIDDLE.

AUTHOR OF WORDS UNKNOWN MUSIC BY MRS. CROSBY ADAMS





In the daytime that queer
  Little house moves away;
And the children run after
  So happy and gay.
But it comes back at night,
  And the children are fed
And tucked up to sleep
  In their warm, cozy bed.

This queer little house
  Has no windows nor doors;
The roof has no chimneys,
  The rooms have no floors;
No fireplaces, chimneys,
  Nor stoves can you see—
Yet the children are cozy
  And warm as can be.

The story of this
  Little house is quite true;
I have seen it myself,
  And I'm sure you have, too;
You can see it today,
  If you watch the old hen
As her downy wings cover
  Her chickens again.

—ANONYMOUS.

EDITORIAL NOTES.

The Unused Energy of Boys and Girls

It is a far cry from what a boy or girl in the grammar and high schools is really capable of doing to what there is actual opportunity for doing in even the best schools. The tendency in this day is to do too much for the pupils in every way. The educative material that we offer is of the "predigested" type that not only spoils the digestion, but destroys the appetite. The teacher cannot too often recall to himself that, beyond what he is able to provide in the way of opportunity for effort, there is very little that he can do toward the education of anyone.

Teachers, under the usual conditions, are so completely cut off in their work from tangible results that can be measured in common terms of value that they are apt to forget what an amount of potential power for actual work exists in the boys and girls with whom they deal. *These boys and girls can do things when they get a chance.*

What Some Boys and Girls Can Do

Recently, out on the endlessly sprawling prairies of the Nebraska ranches, the writer had a fresh realization of this fact. On one farm out there are two boys, twelve and fourteen years old respectively, who have taken care of a hundred acres of corn this summer, and the work was well done. These boys will clear two or three thousand dollars in cash as the tangible result of their year's work. One finds himself puzzled when he tries to think what even the best school in the country could offer these boys as an inducement to enter its halls which would justify them in leaving their ranch. If these two children were to enter an ordinary school, what would it give them? They would exchange the plow, the harrow, and the corn cultivator which they now handle with a perfectly definite motive, and through the use of which they get equally definite results — they would exchange these for tools

that have no particular meaning, and for work that, so far as they can immediately discern, has no particular value. They are now associated with people from whom they purchase live stock, machinery, and many of the necessaries of life, and to whom they sell their grain and other produce. Mistakes in these transactions would be serious business, and these youths, therefore, are acutely training their powers of observation, judgment, and reason. They are also finding out, at first hand, the moral points at issue in dealings between man and man.

What Inducements Can the Schools Offer?

Place these boys, now, in "the best schools," and every one of these character-building, man-making relationships would be severed. They would become members of a class or group whose organizing ties perhaps do not go beyond a common interest in football or some other game. So far as the output is concerned, there is no obvious reason why such a group should exist. Their associations, instead of being of an organic character, definitely formed, are simply the accidents of the situation. To offer these boys the advantages of a school where, instead of their annual output worth thousands of dollars, they would find their product to be a bit of basketry or bric-a-brac worth but a trifle, would very likely seem to them as though we were presenting them a gold brick.

Two Freshmen

I saw another youth in his teens who enters the university this fall. He may or may not have met all the entrance requirements, but I saw him harness a wild horse into a team and drive away eight or ten miles one Sunday evening to a ranch that he might be ready for work early next day. After watching the performance, it seemed to me that he might be credited, on admission, with a couple of orations in Cicero. Afterward, as I observed him handle his team on the steep sides of a cañon and with a great sweep bring hay into the stack, a ton at a time, it seemed no more than right to pass him on the Harvard entrance experiments in physics. Earlier in the season, on short notice, he had planned and executed the delivery of a thousand bushels of grain to a point some thirty

miles distant; and this, it would seem, might be considered the equivalent of several electives. On the whole, it is doubtful if any university could afford to bar him out.

I saw his younger sister mount a wild Indian pony which immediately ran away with her. The girl, however, did not know it was running off, so it made no difference to her, though it did excite the bystanders. Recently she made a business trip of some hundreds of miles for her father, and in returning drove a double team thirty miles of the way by herself over the prairies. These two young people will enter a university this fall that will never suspect how much they know, and it will probably graduate them without ever finding out the one-half that they can do.

What These Examples Mean

I do not mean by this that we should close our schoolhouses and go to ranching. These cases are cited merely to show once more how much good life-making stuff young people in their teens, and even younger, have in them. Here are four young people — and they can be matched by thousands in city and country — that are, several times over, self-supporting. No doubt they are overdoing it somewhat on the ranches, but the schools are certainly at the other extreme. Why should not self-maintenance be an integral part of an education? There is not a healthy boy or girl in the world who, after entering his teens, if opportunity were offered, could not make his "keep and clothes" and, besides, in his spare hours, learn all that the schools have to teach him. Many even younger could do the same. Many, as a matter of fact, are already doing it, and you can generally recognize every one of them by his step a block away. A son of one of my neighbors has put himself through the grammar school by lighting lamps, and it is not a very lucrative job either. Another did the same, in part, by running a very small printing-press, and still another, by organizing and running a daily-paper route. These are the city counterparts of the ranch boys, and they make plain the same fact that the youth of the period have a redundancy of energy that is now absolutely lost to themselves and society.

Self-support and scholarship both have a common denominator in character. They are not alien and mutually repellent. The school on the ranch should not make the ranchman forget his ranch, but it should keep the ranch from turning him into a clod. Likewise, the ranch, standing here for the idea of self-support in the school, should keep the scholar from educating himself into a state of utter helplessness.

True Education Includes the Idea and the Fact of Self-support

The average youth of today is in a sad predicament. His time is mainly divided into two periods — one of enforced tasks, and another of enforced idleness. In the former he is compelled to deal with the empty shells of mathematics, science, language, and history that seem but remotely related to any ideal that he at that age is capable of forming. In the latter, from pure *ennui,* he is driven into all the excesses and vagaries that are supposed to be peculiar to his age, but which he seeks one after the other as a relief from his own idle self. Fraternities, football, cigarettes, and all-around loafing are the last resort of a bored and motiveless youth. If in these early years a boy or girl could have an opportunity and proper encouragement to engage in wholesome, productive, and remunerative work, it is doubtful if big books on the dangers of adolescence would be necessary. If a man between the ages of thirty and thirty-six were to be placed under conditions as unfavorable to his life as those which surround him from twelve to eighteen, the chances are that the psychic phenomena of the former period would be equally startling.

Enforced Tasks and Enforced Idleness

The real problem, therefore, that confronts both teachers and parents is that of providing such opportunities for employment, along with the other school duties, that, as early as possible, the boys and girls shall feel some of the pleasures that are due only to those who are made independent through self-support.

The annual report of Mrs. Harding which appears in this issue will be read with interest and profit by all who are interested in the general movemnt to bring the school and home into closer co-operation. Besides detailing the work of the Home Committee, of which Mrs. Harding was chairman last year, the report gives an insight into the

Parents' Associations

spirit and scope of the association as a whole which must deeply impress one with the importance of the part which it can take in the educational work of the community. That the association can accomplish definite results is shown in the decisive action taken in regard to the fraternities and sororities in the high school. Without the hearty co-operation of the Parents' Association it would have been difficult, if not impossible, to deal effectively with these troublesome organizations.

The monthly meetings of the entire body were devoted to discussions of great importance. At one of these, the diseases of children were considered, and on this occasion medical specialists read helpful papers. Another evening was given to physical culture and athletics; another, to certain lines of school work presented by the teachers, and so on. Probably one of the first parents' associations in the country was that organized by Colonel Parker more than twenty years ago among the patrons of the Cook County Normal School. During his connection of nearly eighteen years with this institution he spared no effort to educate the parents as well as their children. I well recall how many times over and again questions relating to the school were discussed, until the parents had an understanding of what was being attempted. It accordingly happened that, when the fate of the school hung in the balance with the politicians, as it often did, it was the influence of an intelligent parents' association that saved the day.

It cannot be too strongly emphasized that the relation of such an association to the teaching corps should be that of co-operation. Criticisms there may be, but they always should be made from a sincere desire to help solve the difficult problems which confront teacher and parent alike.

In an early issue, the ELEMENTARY SCHOOL TEACHER hopes to publish in full the program for the year for the benefit of its readers. It hopes, also, to publish reports of similar organizations throughout the country.

W. S. J.

BOOK NOTICES.

SMILES'S *Self-Help*. Edited by RALPH LYTTON BOWER. New York: American Book Co. Pp. 304. $0.60.

THIS well-known volume of essays is here presented in a form adapted especially to American readers. Since its first publication, fifty years ago, it has been translated into many languages, it has attained a widespread and enduring popularity, and has exerted a permanent influence upon character and conduct. These essays show that the happiness of every individual must depend upon his own efforts, and that true success is to be attained only through diligent self-culture, self-discipline, and self-control. In the present edition several passages of a distinctly local and British interest have been omitted. Many helpful explanatory notes make the text intelligible to even very young students. An appendix contains brief biographies of most of the important persons mentioned. This is a book which should be used for supplementary reading in every school.

Our Bodies and How We Live. By ALBERT F. BLAISDELL. Revised edition. Boston: Ginn & Co. Pp. 352. $0.65.

IN this revision of Dr. Blaisdell's *Our Bodies* the text has been thoroughly revised and in many parts entirely rewritten. The author's intent has been to bring his well-known book fully into touch with the latest and best scientific thought on physiology and hygiene. Many of the special features of the older book which have met the generous approval of teachers and educators everywhere since its first publication have either been retained or made still more effective. There are the same simple and interesting style, the same careful consideration of practical everyday health, and the same emphasis upon the use of simple experiments.

In addition, the revised book is fully illustrated with engravings and line cuts based upon original drawings and photographs; and the mechanical execution of the book as a whole marks an improvement over the older edition.

Steps in English. By A. C. MCLEAN, THOMAS C. BLAISDELL, AND JOHN MORROW. Book I, pp. 245, with illustrations, $0.40; Book II, pp. 352, with illustrations, $0.60. New York: American Book Co.

THESE books constitute a distinct innovation in teaching language in elementary schools, which is at once sensible, practical, and modern. They teach the child how to express his thoughts in his own language, and do not furnish an undue amount of grammar and rules. They mark out the work for the teacher in a clearly defined manner by telling him what to do and when to do it. From the start lessons in writing language are employed simultaneously with those in conversation; and picture study, study of literary selections, and letter-writing are presented at frequent intervals. The books do not contain too much technical grammar, nor are they filled with sentimental twaddle and gush. The series will be welcomed by teachers who are tired of antiquated methods, and desire live, up-to-date books.

HOWE'S *Handbook of Parliamentary Usage.* New York: Hinds & Noble. $0.50.

THE unique feature of this new handbook is an ingenious visual arrangement of the whole subject-matter of practical parliamentary law in such order that when the book is opened in the middle, the chairman, the speaker, the member who next has the floor, or anyone else, has *before his eyes* a complete summary of *every rule* needed in the conduct of any business meeting. The surprising practicality of this arrangement and of the system of cross-reference used can be fully appreciated only by actual inspection of the book itself. Moreover, it is "really and truly" pocket size, and so does not have to be carried in the hand to and from meeting, but slips easily into and out of the pocket, without crowding or discomfort.

DICKENS'S *Christmas Stories.* Edited by JANE GORDON. New York: American Book Co. Pp. 304. $0.50.

THESE mirth-provoking and yet pathetic stories, written when Dickens was in the full maturity of his marvelous powers, are now issued in the well-known series of "Eclectic School Readings." They are repeated as originally published, except that some of the descriptions have been left out, others abridged, and allusions unfamiliar to American readers have been omitted. All the qualities that have made the name of Dickens a household word remain. It would be well if all school children could be introduced through this book to the master of English humorists.

Gateway Series of English Texts. General Editor, HENRY VAN DYKE. New York: American Book Co.

GEORGE ELIOT'S *Silas Marner.* Edited by WILBUR LUCIUS CROSS. Pp. 336; with portrait of George Eliot. $0.40.

Burke's Speech on Conciliation with America. Edited by WILLIAM MACDONALD. Pp. 164; with portrait of Burke. $0.35.

THE latest additions to this new series, which will include all the college-entrance requirements in English. The editorial work has been intrusted to scholars of special fitness. Each volume contains a portrait and a biography of the author, and an introduction dealing with the subject of the book, the way in which it is written, its relation to human life, and its place in literature. The texts are derived from the latest authoritative sources. The series should be welcomed by all teachers of English literature.

Elementary Algebra. By J. H. TANNER. New York: American Book Co. Pp. 374. $1.

THE latest addition to the "Modern Mathematical Series," prepared under the general editorship of Professor Wait, of Cornell University. The transition from arithmetic to algebra has been made as easy and natural as possible, and the author has aimed to arouse and sustain the student's interest in the work, and to teach him to think clearly and reason correctly. The book is designed to meet the most exacting entrance-examination requirements of any college or university in this country, and especially the revised requirements of the College Entrance Board.